UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/000,191	10/19/2001	Stephen M. Alfieri	CRESC-009XX	9546

7590 01/13/2005	EXAMINER

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ART UNIT	PAPER NUMBER
2157	

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Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/000,191	ALFIERI ET AL.
	Examiner	Art Unit
	El Hadji M Sall	2157

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 October 2001*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some *　c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
　　Paper No(s)/Mail Date _05|15|02, 02|03|02_

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

1.   **DETAILED ACTION**

This action is responsive to the application filed on October 16, 2001. Claims 1-10 are pending. Claims 1-10 represent dense virtual router packet switching.

2.   *Claim Rejections - 35 USC § 102*

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3.   Claims 1-10 are rejected under 35 U.S.C. 102(e) as being unpatentable over Casey et al. U.S. 6,205,488.

Casey teaches the invention as claimed including Internet protocol virtual private network realization using multi-protocol label switching tunnels.

As to claim 1, Casey teaches a virtual routing system, comprising:

a memory divided into a configurable number of context areas for a corresponding set of virtual private routed networks (VPRNs), each context area including a routing table and associated routing protocol state information for the corresponding VPRN, each VPRN employing a respective routing protocol and network address space (abstract, Casey discloses...The router includes a first table which stores a map of the label switched paths from the router in question to all other routers connected to the shared MPLS network...; column 1-2, lines 61-67 to lines 1-11, Casey discloses...The present invention includes multiple routers in communication with the shared MPLS network and configured to dynamically distribute VPN information across the shared MPLS network...; column 3, lines 23-37, Casey discloses...The interfaces to the links 30 each have assigned to them an IP address from the provider's IP address space...);

a set of one or more routing tasks, the set including at least one routing task for each different type of routing protocol employed in the set of VPRNs, each routing task being operable only with a separate routing table and with separate routing protocol state information to realize a corresponding virtual router to carry out associated routing operations in a VPRN (column 4, lines 10-15, Casey discloses Using a VR to exchange routing information with one or more enterprise site routers is the most general mechanism for disseminating private network reachability information. Part of the stub link configuration is to specify what routing protocol runs over it, between the private network router and the VBR 10; column 4, lines 51-55, Casey discloses as a result of routing exchanges between peer VRs and between VRs and private network routers, as appropriate, each VR will build a forwarding table that relates private network address prefixes (forward equivalency classes) to next hop); and

context selection logic operative to selectively couple the routing tasks to the different context areas of the memory to realize a set of virtual routers, each virtual router being associated with a corresponding one of the VPRNs (column 3, lines 55-67, Casey discloses...The provider then provisions stub links (i.e. links between VRs and

one or more routers at each private network (private routers)). Stub link interfaces are assigned IP addresses from the private network's IP address space...).

As to claim 2, Casey teaches a virtual routing system according to claim 1, wherein the set of routing tasks includes at least one Open Shortest Path First (OSPF) routing task and at least one Border Gateway Protocol (BGP) routing task (column 3, lines 7-11, Casey discloses those skilled in the art will recognize that there are several ways to accomplish the distribution of the VPN information such as OSPF opaque LSAs, TCP connections, BGP-4, etc. without departing from the scope of the present Invention).

As to claim 3, Casey teaches a virtual routing system according to claim 1, further comprising a set of virtual interfaces operative to translate between generic interface identifiers used by the virtual routers and physical interface information for physical network links to which the virtual routing system is connected (abstract, Casey discloses...The VPN information distributed by a router includes a VPN identifier assigned to that router, which identifies a VPN with which that router is associated...).

As to claim 4, Casey teaches a virtual routing system according to claim 3, wherein the physical network links to which the virtual routing system is connected employ label switched paths, and wherein the set of virtual interfaces include virtual interfaces containing information for encapsulating and attaching labels to packets on the label switched paths (abstract, Casey discloses...hat router, which identifies a VPN with which that router is associated. The router includes a first table which stores a map of the label switched paths from the router in question to all other routers connected to the shared MPLS network...).

As to claim 5, Casey teaches a virtual routing system according to claim 1, wherein the selective coupling of the routing tasks to the different context areas of the memory is performed at the rate at which protocol packets for the various VPRNs are

received by the virtual routing system (column 4, lines 52-67, Casey discloses... When the packet arrives at the destination VBR 10 the outermost label 50 may have changed several times, but the nested label 40 has not changed. As the label stack is popped, the nested label 40 is used to direct the packet to the correct VR).

As to claim 6, Casey teaches a method of operating a routing system, comprising:

maintaining a number of context areas in a memory for a corresponding set of virtual private routed networks (VPRNs), each context area including a routing table and associated routing protocol state information for the corresponding VPRN, each VPRN employing a respective routing protocol and network address space (abstract, Casey discloses... The router includes a first table which stores a map of the label switched paths from the router in question to all other routers connected to the shared MPLS network...; column 1-2, lines 61-67 to lines 1-11, Casey discloses... The present invention includes multiple routers in communication with the shared MPLS network and configured to dynamically distribute VPN information across the shared MPLS network...; column 3, lines 23-37, Casey discloses... The interfaces to the links 30 each have assigned to them an IP address from the provider's IP address space...);

executing a set of one or more routing tasks, the set including at least one routing task for each different type of routing protocol employed in the set of VPRNs, each routing task being operable only with a separate routing table and with separate routing protocol state information to realize a corresponding virtual router to carry out associated routing operations in a VPRN (column 4, lines 10-15, Casey discloses Using a VR to exchange routing information with one or more enterprise site routers is the most general mechanism for disseminating private network reachability information. Part of the stub link configuration is to specify what routing protocol runs over it, between the private network router and the VBR 10; column 4, lines 51-55, Casey discloses as a result of routing exchanges between peer VRs and between VRs and private network routers, as appropriate, each VR will build

a forwarding table that relates private network address prefixes (forward equivalency classes) to next hop); and

selectively coupling the routing tasks to the different context areas of the memory to realize a set of virtual routers, each virtual router being associated with a corresponding one of the VPRNs (column 3, lines 55-67, Casey discloses...The provider then provisions stub links (i.e. links between VRs and one or more routers at each private network (private routers)). Stub link interfaces are assigned IP addresses from the private network's IP address space...).

As to claim 7, Casey teaches a method according to claim 6, wherein the set of routing tasks includes at least one Open Shortest Path First (OSPF) routing task and at least one Border Gateway Protocol (BGP) routing task (column 3, lines 7-11, Casey discloses those skilled in the art will recognize that there are several ways to accomplish the distribution of the VPN information such as OSPF opaque LSAs, TCP connections, BGP-4, etc. without departing from the scope of the present Invention).

As to claim 8, Casey teaches a method according to claim 6, further comprising maintaining a set of virtual interfaces operative to translate between generic interface identifiers used by the virtual routers and physical interface information for physical network links to which the virtual routing system is connected (abstract, Casey discloses...The VPN information distributed by a router includes a VPN identifier assigned to that router, which identifies a VPN with which that router is associated...).

As to claim 9, Casey teaches a method according to claim 8, wherein the physical network links to which the virtual routing system is connected employ label switched paths, and wherein the set of virtual interfaces include virtual interfaces containing information for encapsulating and attaching labels to packets on the label switched paths (abstract, Casey discloses...hat router, which identifies a VPN with which that router is associated. The router includes a first table which stores a map of

the label switched paths from the router in question to all other routers connected to the shared MPLS network...).

As to claim 10, Casey teaches a method according to claim 6, wherein the selective coupling of the routing tasks to the different context areas of the memory is performed at the rate at which protocol packets for the various VPRNs are received by the virtual routing system (column 4, lines 52-67, Casey discloses... When the packet arrives at the destination VBR 10 the outermost label 50 may have changed several times, but the nested label 40 has not changed. As the label stack is popped, the nested label 40 is used to direct the packet to the correct VR).

4.   *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to El Hadji M Sall whose telephone number is 571-272-4010. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on 571-272-4001. The fax phone number for the organization where this application or proceeding is assigned is 571-273-4010.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

El Hadji Sall
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